IN THE CLAIMS

1. (Currently amended) A semiconductor device having a first vertical type bipolar transistor and a second vertical type bipolar transistor ~~having a breakdown voltage that is higher than a breakdown voltage of the first vertical type bipolar transistor, said first vertical type bipolar transistor and said second vertical type bipolar transistor~~ each transistor having an emitter, a base, and a collector, the semiconductor device comprising:

a P-type substrate;

an N-type epitaxial layer formed on the substrate;

a first embedded diffusion layer formed as a part of the collector of the first vertical type bipolar transistor in a first upper part of the substrate and in the epitaxial layer; and

a second embedded diffusion layer formed as a part of the collector of the second vertical type bipolar transistor directly on the substrate, in a second upper part of the substrate, wherein a top of the second embedded diffusion layer is formed at a distance from a surface of the emitter of the second vertical type bipolar transistor greater than a distance between a top of the first embedded diffusion layer and a surface of the emitter of the first vertical type bipolar transistor, and a bottom of the second embedded diffusion layer is formed at a distance from the surface of the emitter of the second vertical type bipolar transistor greater than a distance between a bottom of the first embedded diffusion layer and the surface of the emitter of the first vertical type bipolar transistor;

wherein the collector of the first vertical type bipolar transistor has a thickness that is less than a thickness of the collector of the second vertical type bipolar transistor, which results in the second vertical type bipolar transistor having a breakdown voltage that is higher than a breakdown voltage of the first vertical type bipolar transistor.

2. (Canceled)

3. (Canceled)

4. (Currently amended) A semiconductor device according to claim 1, wherein ~~the~~ an impurity concentration of the second embedded diffusion layer includes a first impurity concentration that is equal to and a second impurity concentration that is greater than ~~the~~ an impurity concentration of that portion of the epitaxial layer formed above the second embedded diffusion layer, and wherein a distance between a location of peak impurity concentration within the second embedded diffusion layer and a location where the second embedded diffusion layer ~~intersects~~ meets the substrate is less than one-half of a distance between the location of peak impurity concentration and a location where the second embedded diffusion layer ~~intersects~~ meets the epitaxial layer.

5. (Canceled)

6. (Currently amended) A semiconductor device according to claim 1, wherein the substrate is a single substrate, and wherein ~~the~~ an impurity concentration of the second embedded diffusion layer is between about $1x10^{13}$ and about $1x10^{15}$.

7-19. (Canceled)

20. (Previously presented) A semiconductor device according to claim 1 further comprising:

a first base layer disposed between two first graft base layers and disposed above the first embedded diffusion layer on the epitaxial layer to define a first epitaxial thickness between the first base layer and the first embedded diffusion layer; and

a second base layer disposed between two second graft base layers and disposed above the second embedded diffusion layer on the epitaxial layer to define a second epitaxial thickness between the second base layer and the second embedded diffusion layer,

wherein the first epitaxial thickness is less than the second epitaxial thickness; and

wherein only the epitaxial layer is disposed between the base layer and the second embedded diffusion layer.

21. (Currently amended) A semiconductor device according to claim 1, wherein an impurity concentration of the second embedded diffusion layer is approximately equal to or higher than ~~the epitaxial impurity concentration~~ an impurity concentration of said epitaxial layer at all depths of the second vertical type bipolar transistor between the ~~surface of the emitter~~ surface of the emitter of the second vertical type bipolar transistor and a position of peak impurity concentration within the second embedded diffusion layer.

22. (Previously presented) A semiconductor device according to claim 1, wherein a peak position of an impurity concentration of the second embedded diffusion layer resides at a distance from the surface of the emitter of the second vertical type bipolar transistor that is approximately equal to a distance from the bottom of the first embedded diffusion layer to the surface of the emitter of the first vertical type bipolar transmitter.

23. (Previously presented) A semiconductor device according to claim 1, wherein the first vertical type bipolar transistor defines a voltage that is different than a voltage of the second vertical type bipolar transistor,

wherein the substrate is a silicon substrate,

wherein the first embedded diffusion layer includes an impurity concentration that is higher than the epitaxial impurity concentration, and

wherein the second embedded diffusion layer defines a conductive type that is the same as the epitaxial conductive type.

24. (Previously presented) A semiconductor device according to claim 1, wherein the second vertical type bipolar transistor includes a base layer disposed between two graft base layers and wherein only the epitaxial layer is disposed between the base layer and the second embedded diffusion layer.

25. (Currently amended) ~~The~~ A semiconductor device ~~of~~ according to claim 1, wherein the second embedded diffusion layer is an N^+-type second embedded diffusion layer and is slightly diffused into a lower part of the epitaxial layer.

26-29. (Canceled)

30. (Currently amended) ~~The~~ A semiconductor device ~~of~~ according to claim 1, wherein the thickness of the collector of the first vertical type bipolar transistor being less than the thickness of the collector of the second vertical type bipolar transistor also results in the first vertical type bipolar transistor ~~operates~~ operating at a higher speed than the second vertical type bipolar transistor.

31. (Currently amended) ~~The~~ A semiconductor device ~~of~~ according to claim 1, wherein the thickness of the collector of the first vertical type bipolar transistor being less than the thickness of the collector of the second vertical type bipolar transistor also results in the second vertical type bipolar transistor ~~operates~~ operating at a higher voltage than the first vertical type bipolar transistor.

32. (Currently amended) A semiconductor device having a first vertical type bipolar transistor and a second vertical type bipolar transistor ~~having a breakdown voltage that is higher than a breakdown voltage of the first vertical type bipolar transistor, said first vertical type bipolar transistor and said second vertical type bipolar transistor~~ each transistor having an emitter, a base, and a collector, the semiconductor device comprising:

a P-type substrate;

an N-type epitaxial layer formed on the substrate;

a first embedded diffusion layer formed as a part of the first vertical type bipolar transistor in a first upper part of the substrate and in the epitaxial layer; and

a second embedded diffusion layer formed as a part of the second vertical type bipolar transistor directly on the substrate, in a second upper part of the substrate[[,]];

wherein the second embedded diffusion layer includes an impurity concentration that is less than an impurity concentration of the first embedded diffusion layer, ~~and~~

wherein a top of the second embedded diffusion layer is formed at a distance from a surface of the emitter of the second vertical type bipolar transistor greater than a distance between a top of the first embedded diffusion layer and a surface of the emitter of the first vertical type bipolar transistor, and a bottom of the second embedded diffusion layer is formed at a distance from the surface of the emitter of the second vertical type bipolar transistor greater than a distance between a bottom of the first embedded diffusion layer and the surface of the emitter of the first vertical type bipolar transistor; and

wherein the collector of the first vertical type bipolar transistor has a thickness that is less than a thickness of the collector of the second vertical type bipolar transistor, which results in the second vertical type bipolar transistor having a breakdown voltage that is higher than a breakdown voltage of the first vertical type bipolar transistor.

33. (New) A semiconductor device according to claim 32, wherein a bottom of the collector of the second vertical type bipolar transistor, a bottom of said N-type epitaxial layer, and a top of said P-type substrate are coplanar.

34. (New) A semiconductor device according to claim 32, wherein said N-type epitaxial layer is formed on a top of the first embedded diffusion layer and on a top of the second embedded diffusion layer.